

REMARKS

Claims 1-40 remain pending and under current examination. Applicant respectfully requests reconsideration of this application in view of the following remarks.

I. Regarding the Final Office Action

In the Office Action¹, the Examiner rejected claims 1-5 and 7-40 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,995,991 to Huang et al. ("*Huang*"); and rejected claims 1-5 and 7-40 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,009,511 to Lynch et al. ("*Lynch*").

Applicant gratefully acknowledges the indication of allowable subject matter in claim 6 (Office Action mailed September 22, 2004 at pp. 7-8). Applicant respectfully traverses the Examiner's rejections for the following reasons.

II. Regarding the rejection of claims 1-5 and 7-40 under 35 U.S.C. § 103(a) as being unpatentable over *Huang*

Applicant respectfully requests that the Examiner reconsider and withdraw the rejection of claims 1-5 and 7-40 because a *prima facie* case of obviousness has not been established with respect to these claims.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must

¹ The Office Action contains a number of statements reflecting characterizations of the related art and the claims. Regardless of whether any such statement is identified herein, Applicants decline to automatically subscribe to any statement or characterization in the Office Action.

both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). M.P.E.P. § 2142, 8th Ed., Rev. 2 (May 2004), p. 2100-128.

A *prima facie* case of obviousness has not been established because, among other things, *Huang* fails to teach or suggest each and every element of Applicant's claims.

Claim 1 recites a combination including, for example,

an analyzer circuit configured to determine a first status of a first floating point operand and a second status of a second floating point operand based upon data within the first floating point operand and data within the second floating point operand respectively; and

a results circuit coupled to the analyzer circuit and configured to assert a resulting floating point operand containing the sum of the first floating point operand and the second floating point operand and a resulting status embedded within the resulting floating point operand

(emphasis added). *Huang* does not teach or suggest at least these elements.

The Examiner agrees that *Huang* fails to teach or suggest each and every element of claim 1, stating "Huang et al. do not specifically detail the claimed 'analyzer circuit configured to determine a **first status** of a first floating point operand and a **second status** of a second floating point operand,' (emphasis in original, Office Action mailed September 22, 2004 at p. 3). The Examiner has not provided any reference teaching or suggesting at least this element, as required by M.P.E.P. § 2142 discussed above, and requested in the previous Response of December 16, 2004 at pages 16 and 17. M.P.E.P. § 2144.03(c) states "[i]f applicant adequately traverses the examiner's assertion of official notice, the examiner must provide documentary evidence in the next Office action if the rejection is to be maintained." Applicant respectfully renews the request for documentary evidence teaching each and every element of Applicant's claims.

Because the Examiner has not provided any reference teaching or suggesting at least this element, Applicant respectfully requests that the Examiner withdraw the finality of the Office Action mailed May 31, 2005. Moreover, at least because the Examiner agrees that *Huang* fails to teach or suggest each and every element of claim 1, Applicant respectfully requests the Examiner to reconsider and withdraw the rejection of claim 1 under 35 U.S.C. § 103(a) as being unpatentable over *Huang*.

Nevertheless, in response to reasoning presented in Applicant's previous Response of December 16, 2004, the Examiner asserts, "in the previous office action ... it is stated '[h]owever, Huang et al do disclose X and Y operand registers each includes a special operand indicator'" (emphasis added, Office Action at p. 3). This assertion is incorrect. The Examiner has not made clear what teachings in *Huang* show the Examiner's coined term "special operand indicator" or how such alleged teachings relate to, for example, the claimed "determine a first status of a first floating point operand and a second status of a second floating point operand based upon data within the first floating point operand and data within the second floating point operand respectively" or "a resulting status embedded within the resulting floating point operand," (emphasis added) as recited by claim 1.

The Examiner's coined term "special operand indicator" appears to refer to a tag value of *Huang*. However, *Huang*'s teaching of a "tag value" does not constitute a teaching or suggestion of "data within the first floating point operand and data within the second floating point operand" or "a resulting status embedded within the resulting floating point operand," (emphasis added) as recited by claim 1.

Huang contradicts the Examiner's assertion. *Huang* teaches "each portion of the registers 116 and 118 has an operand value storage portion 116-1 and 118-1 and a tag value storage portion 116-2 and 118-2" (emphasis added, *Huang*, col. 6, line 66 through col. 7, line 2). *Huang* thus teaches a separate operand value storage portion, 116-1, and a separate tag value storage portion for the x_tag 116-2 (*Huang*, col. 6, line 66 through col. 7, line 2, see also Fig. 4).

Huang further emphasizes a separate tag portion and operand portion, teaching "the operands ... stored in the operand portion 116-1 of the registers 116 are inputted ... [i]n addition, the tag values x_tag, y_tag stored in tag portions 116-2 are inputted directly to the arithmetic section as control signals indicating the operand types of the respective operands X and Y" (emphasis added, *Huang*, col. 7, lines 8-14). That is, *Huang* explicitly contradicts the Examiner's conclusion that "operand registers each includes a special operand indicator" (Office Action at p. 3) by stating that the operand is in an operand portion (e.g., without the tag unit), because the tag is in a separate portion used to indicate the operand type. Therefore, *Huang* does not teach or suggest at least a system to "determine a first status of a first floating point operand and a second status of a second floating point operand based upon data within the first floating point operand and data within the second floating point operand respectively" or "a resulting status embedded within the resulting floating point operand," (emphasis added) as recited by claim 1.

In summary, *Huang* does not teach or suggest at least a circuit to "determine a first status of a first floating point operand and a second status of a second floating point operand based upon data within the first floating point operand and data within the

second floating point operand respectively” or “a resulting status embedded within the resulting floating point operand,” (emphasis added) as recited by claim 1. Therefore, *Huang* fails to teach or suggest each and every element of claim 1.

Because *Huang* does not teach or suggest each and every element recited by claim 1 and required by dependent claims 2-5 and 7-14, no *prima facie* case of obviousness has been established with respect to these claims. Accordingly, Applicant respectfully requests the Examiner to reconsider and withdraw the rejection of claims 1-5 and 7-14 under 35 U.S.C. § 103(a) as being unpatentable over *Huang*.

Moreover, in response to reasoning presented in Applicant’s previous Response of December 16, 2004, the Examiner asserts “[t]he statement does disclose the equivalent function(s) of ‘missing element’” (Office Action at p. 3). The intended meaning of this statement is not clear. However, regardless of the intended meaning or whether any alleged equivalent is identified herein, Applicant declines to automatically subscribe to any equivalent characterization in the Office Action.

In addition, Applicant notes that *Huang* is the only reference relied upon by the Examiner for this particular rejection. The M.P.E.P. sets forth that

The distinction between rejections based on 35 U.S.C. 102 and those based on 35 U.S.C. 103 should be kept in mind. Under the former, the claim is anticipated by the reference. No question of obviousness is present. In other words, for anticipation under 35 U.S.C. 102, the reference must teach every aspect of the claimed invention either explicitly or impliedly. Any feature not directly taught must be inherently present. Whereas, in a rejection based on 35 U.S.C. 103, the reference teachings must somehow be modified in order to meet the claims. The modification must be one which would have been obvious to one of ordinary skill in the art at the time the invention was made. M.P.E.P. § 706.02(IV).

The M.P.E.P. clearly instructs that, for a proper 35 U.S.C. § 103 rejection, “the reference teachings must somehow be modified in order to meet the claims.” M.P.E.P. § 706.02(IV). Therefore, if the Examiner applies a 35 U.S.C. § 103(a) rejection based on *Huang*, he must articulate how *Huang* must be modified to allegedly teach each and every claim element. The Examiner does not explain how or why *Huang* must be modified, other than to make a generalized allegation that “[i]t would have been obvious to ...design the claimed invention according to Huang et al’s teachings because the device is an **arithmetic calculation circuit (100)** having special operand indicator in each operand register as claimed” (emphasis in original, Office Action mailed September 22, 2004 at p. 4).

The M.P.E.P. further instructs that,

[a]fter indicating that the rejection is under 35 U.S.C. 103, the examiner should set forth in the Office action:

- (A) the relevant teachings of the prior art relied upon, preferably with reference to the relevant column or page number(s) and line number(s) where appropriate,
- (B) the difference or differences in the claim over the applied reference(s),
- (C) the proposed modification of the applied reference(s) necessary to arrive at the claimed subject matter, and
- (D) an explanation why one of ordinary skill in the art at the time the invention was made would have been motivated to make the proposed modification

(emphasis added, M.P.E.P. § 706.02(j)). The Examiner has not set forth at least “an explanation why one of ordinary skill in the art at the time the invention was made would have been motivated to make the proposed modification.” Id.

“It is important for an examiner to properly communicate the basis for a rejection so that the issue can be identified early and the applicant can be given a fair opportunity

to reply.” M.P.E.P. § 706.02(j). The Examiner’s rejections are not properly communicated, as there is no explanation of why one of ordinary skill in the art at the time the invention was made would have been motivated to make the proposed modification to meet the elements of at least Applicant’s independent claims 1, 15, and 28. The Examiner has not set forth at least “an explanation why one of ordinary skill in the art at the time the invention was made would have been motivated to make the proposed modification.” M.P.E.P. § 706.02(j).

Also with respect to dependent claims 2, 4, 7, and 9-14, the Examiner has not addressed the elements recited by these claims or provided any motivation, other than to make general conclusions that “*Huang* ... should have” the recited claim elements, *Huang* is “capable of” the recited claim elements, that the recited elements are “well known,” that the recited elements are “obvious,” and that the recited elements are “obvious design choice” (Office Action mailed September 22, 2004 at pp. 4-5). As M.P.E.P. § 2144.03(B) makes clear,

there must be some form of evidence in the record to support an assertion of common knowledge ... general conclusions concerning what is "basic knowledge" or "common sense" to one of ordinary skill in the art without specific factual findings and some concrete evidence in the record to support these findings will not support an obviousness rejection. ... The examiner must provide specific factual findings predicated on sound technical and scientific reasoning to support his or her conclusion of common knowledge. The applicant should be presented with the explicit basis on which the examiner regards the matter as subject to official notice and be allowed to challenge the assertion in the next reply after the Office action in which the common knowledge statement was made

(internal citations omitted). Applicant respectfully submits that the Examiner’s general conclusions are not sufficient to support a rejection under 35 U.S.C. § 103(a). Applicant requests that the Examiner provide documentary evidence, supported with sound

technical and scientific reasoning, teaching each and every element of Applicant's dependent claims. Because the Examiner has not properly communicated the basis for the rejection, Applicant respectfully requests the Examiner to withdraw the finality of the Office Action mailed May 31, 2005.

For at least these additional reasons, Applicant respectfully requests the Examiner to reconsider and withdraw the rejection of claims 1-5 and 7-14 under 35 U.S.C. § 103(a) as being unpatentable over *Huang*.

Independent claim 15 and 28, although of different scope, recite similar elements to claim 1. Claims 16-27 and 29-40 depend from independent claims 15 and 28 and therefore include all of the elements recited therein. Accordingly, for at least the reasons discussed above, no *prima facie* case of obviousness has been established with respect to claims 15-40. Applicant therefore respectfully requests the Examiner to reconsider and withdraw the rejection of claims 15-40 under 35 U.S.C. § 103(a) as being unpatentable over *Huang*.

III. Regarding the rejection of claims 1-5 and 7-40 under 35 U.S.C. § 103(a) as being unpatentable over *Lynch*

Applicant respectfully requests that the Examiner reconsider and withdraw the rejection of claims 1-5 and 7-40 because a *prima facie* case of obviousness has not been established with respect to these claims. A *prima facie* case of obviousness has not been established because, among other things, *Lynch* does not teach or suggest each and every element of Applicant's claims.

As noted above, claim 1 recites a combination including, for example,

an analyzer circuit configured to determine a first status of a first floating point operand and a second status of a second floating point operand based upon data within the first floating point operand and data within the second floating point operand respectively; and

a results circuit coupled to the analyzer circuit and configured to assert a resulting floating point operand containing the sum of the first floating point operand and the second floating point operand and a resulting status embedded within the resulting floating point operand

(emphasis added). *Lynch* does not teach or suggest at least these elements.

The Examiner concedes that *Lynch* does not teach or suggest each and every element recited by claim 1, stating:

It is noted that *Lynch et al* do not specifically detail the claimed 'analyzer circuit configured to determine a **first status** of a first floating point operands and a **second status** of a second floating point operand

(emphasis in original, Office Action mailed September 22, 2004 at p. 5). The Examiner has not provided any reference teaching or suggesting at least these elements, as required by M.P.E.P. § 2142 discussed above, and requested in the previous Response of December 16, 2004 at page 18. M.P.E.P. § 2144.03(c) states "[i]f applicant adequately traverses the examiner's assertion of official notice, the examiner must provide documentary evidence in the next Office action if the rejection is to be maintained." Applicant respectfully renews the request for documentary evidence teaching each and every element of Applicant's claims.

Because the Examiner has not provided any reference teaching or suggesting at least this element, Applicant respectfully requests that the Examiner withdraw the finality of the Office Action mailed May 31, 2005. Moreover, at least because the Examiner agrees that *Lynch* fails to teach or suggest each and every element of claim

1, Applicant respectfully requests the Examiner to reconsider and withdraw the rejection of claim 1 under 35 U.S.C. § 103(a) as being unpatentable over *Lynch*.

Nevertheless, in response to reasoning presented in Applicant's previous Response of December 16, 2004, the Examiner asserts,

in the previous office action ... it is stated '[h]owever, Lynch et al do disclose the equivalent function ... by appending tag values to each floating point number, the floating point unit can quickly determine which floating point numbers are special floating point numbers and the type of special floating point number' (page 5, line 19 to page 6, line 2).

(emphasis added, Office Action at p. 3).

The Examiner additionally concedes that *Lynch* does not teach or suggest at least "data within the ... operand," as recited by claim 1, by stating that *Lynch* appends the tag values. The "tag value" taught by *Lynch* is not "within the ... floating point operand" or "a resulting status embedded within the resulting floating point operand" as recited by claim 1.

Rather, *Lynch* teaches in col. 15, line 64 through col. 16, line 5,

[t]ag field 89 is configured to store a plurality of bits that store a tag value. Each tag value in tag field 89 is associated with a register value in register field 87. In one embodiment, the tag value stored in tag field 89 indicates whether the floating point register value stored in the associated register field 87 is a normal floating point number or a special floating point number

(emphasis added). That is, *Lynch* teaches a separate tag field 89 associated with a register field 87. As agreed by the Examiner, *Lynch* teaches "[a] tag value is appended" (col. 5, line 44). Neither this teaching, nor any other teaching of *Lynch*, constitutes a teaching or suggestion of a system "determine a first status of a first floating point operand and a second status of a second floating point operand based upon data within

the first floating point operand and data within the second floating point operand respectively” or “a resulting status embedded within the resulting floating point operand,” (emphasis added) as recited by claim 1.

This is further emphasized in col. 16, lines 62-65, where *Lynch* teaches “FPU core 94 uses the tag value associated with an operand to determine whether the operand is a special floating point number” (emphasis added). Such teachings by *Lynch* do not constitute teachings or suggestions of “determine a first status of a first floating point operand and a second status of a second floating point operand based upon data within the first floating point operand and data within the second floating point operand respectively” or “a resulting status embedded within the resulting floating point operand,” (emphasis added) as recited by claim 1. Therefore, *Lynch* fails to teach or suggest each and every element of claim 1.

Because *Lynch* does not teach or suggest each and every element recited by claim 1 and required by dependent claims 2-5 and 7-14, no *prima facie* case of obviousness has been established with respect to this claim. Accordingly, Applicant respectfully requests the Examiner to reconsider and withdraw the rejection of claims 1-5 and 7-14 under 35 U.S.C. § 103(a) as being unpatentable over *Lynch*.

Moreover, in response to reasoning presented in Applicant’s previous Response of December 16, 2004, the Examiner asserts “[t]he statement does disclose the equivalent function(s) of ‘missing element’” (Office Action at p. 3). The intended meaning of this statement is not clear. However, regardless of the intended meaning or whether any alleged equivalent is identified herein, Applicant declines to automatically subscribe to any equivalent characterization in the Office Action.

In addition, as discussed above, the M.P.E.P. clearly instructs that, for a proper 35 U.S.C. § 103 rejection based on a single reference, “the reference teachings must somehow be modified in order to meet the claims.” M.P.E.P. § 706.02(IV). Therefore, if the Examiner applies a 35 U.S.C. § 103(a) rejection based on *Lynch*, he must articulate how *Lynch* must be modified to allegedly teach each and every claim element. The Examiner does not explain how or why *Lynch* must be modified, other than to make a generalized allegation that “[i]t would have been obvious to ... design the claimed invention according to Lynch et al’s teachings because the device is a **floating point unit (36)** having the ‘determine which floating point numbers are special floating point numbers and the type of special floating point number’ as claimed” (emphasis in original, Office Action mailed September 22, 2004 at p. 6).

As discussed above, “[i]t is important for an examiner to properly communicate the basis for a rejection so that the issue can be identified early and the applicant can be given a fair opportunity to reply.” M.P.E.P. § 706.02(j). The Examiner’s rejections are not properly communicated, as there is no explanation of why one of ordinary skill in the art at the time the invention was made would have been motivated to make the proposed modification to meet the elements of at least Applicant’s independent claims 1, 15, and 28. The Examiner has not set forth at least “an explanation why one of ordinary skill in the art at the time the invention was made would have been motivated to make the proposed modification.” M.P.E.P. § 706.02(j).

Applicant also respectfully requests the Examiner to properly communicate the grounds of rejection for dependent claims 2-5 and 7-14. The Examiner’s rejections are not properly communicated, as there is no explanation of why one of ordinary skill in the

art at the time the invention was made would have been motivated to make the proposed modification to meet the elements of these claims.

Also with respect to dependent claims 2, 4, 5, 7, and 9-14, the Examiner has not addressed the elements recited by these claims, other than to make a general conclusions that *Lynch* "should have" the recited elements, that *Lynch* is "capable of" the recited elements, that the recited elements are "well known," and that the recited elements are "obvious" or "obvious design choice" (Office Action mailed September 22, 2004 at pp. 6-7). As noted above, Applicant respectfully submits that the Examiner's general conclusions are not sufficient to support a rejection under 35 U.S.C. § 103(a). Applicant requests that the Examiner provide documentary evidence, supported with sound technical and scientific reasoning, teaching each and every element of Applicant's dependent claims. Because the Examiner has not properly communicated the basis for the rejection, Applicant respectfully requests the Examiner to withdraw the finality of the Office Action mailed May 31, 2005.

For at least these additional reasons, Applicant respectfully requests the Examiner to reconsider and withdraw the rejection of claims 1-5 and 7-14 under 35 U.S.C. § 103(a) as being unpatentable over *Lynch*.

Independent claims 15 and 28, although of different scope, recite similar elements to claim 1. Claims 16-27 and 29-40 depend from independent claims 15 and 28 and therefore include all of the elements recited therein. Accordingly, no *prima facie* case of obviousness has been established with respect to claims 15-40 at least for the reasons discussed above. Applicant therefore respectfully requests the Examiner to

reconsider and withdraw the rejection of claims 15-40 under 35 U.S.C. § 103(a) as being unpatentable over *Lynch*.

IV. Conclusion

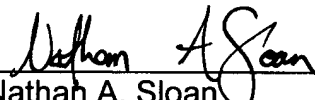
In view of the foregoing remarks, Applicant submits that this claimed invention is neither anticipated nor rendered obvious in view of the prior art references cited against this application. Applicant therefore requests the Examiner's reconsideration and reexamination of the application, and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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Dated: July 29, 2005

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